

(19) World Intellectual Property Organization
International Bureau



(43) International Publication Date
24 December 2003 (24.12.2003)

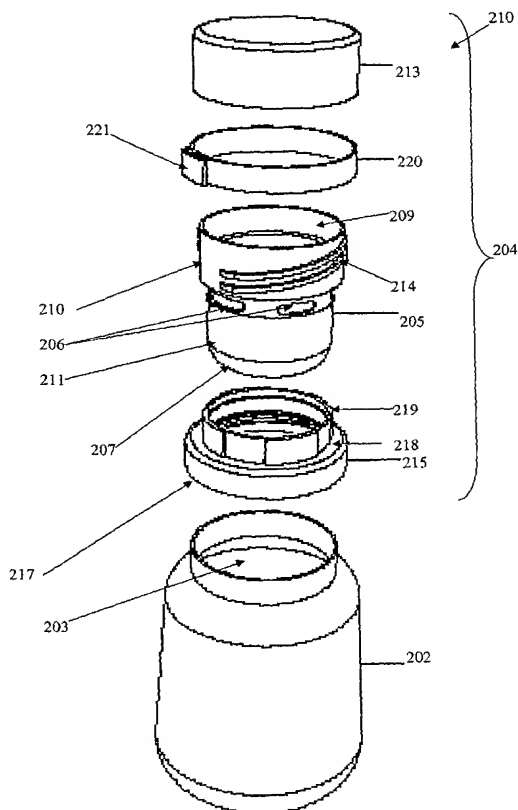
PCT

(10) International Publication Number
WO 03/106292 A1

- (51) International Patent Classification⁷: **B65D 81/32**, A61J 9/00 (74) Agent: **CULLEN & CO**; Level 26, 239 George Street, Brisbane, QLD 4000 (AU).
- (21) International Application Number: PCT/AU03/00733 (81) Designated States (*national*): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NI, NO, NZ, OM, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.
- (22) International Filing Date: 12 June 2003 (12.06.2003)
- (25) Filing Language: English
- (26) Publication Language: English
- (30) Priority Data: PS 2905 12 June 2002 (12.06.2002) AU
- (71) Applicants and (72) Inventors: **SMITH, Adam** [AU/AU]; Streetscape Projects, Suite 308, Henry Lawson Business Centre, Roseby Street, Birken Head, NSW 2048 (AU). **GANNON, Glen, Charles** [AU/AU]; Streetscape Projects, Suite 308, Henry Lawson Business Centre, Roseby Street, Birken Head, NSW 2048 (AU).
- (84) Designated States (*regional*): ARIPO patent (GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

[Continued on next page]

(54) Title: A DRINK CONTAINER FOR COMBINING A POWDER WITH A LIQUID



(57) Abstract: A container (201) for mixing two substances, the container (201) having a first compartment (202) which can hold a first substance, the first compartment (202) having an opening (203) and a mixer portion (204) releasably attached relative to the first compartment (202), the mixer portion (204) comprising a second compartment (205) which can hold a second substance, the second compartment (205) having at least one opening (206) therein wherein the compartments (202, 205) are movable between a first condition wherein the first substance and the second substance are separated and at least one second condition wherein the at least one opening (206) in the second compartment (205) is aligned with the at least one opening (203) in the third compartment (202) to allow the substances to be combined in the second compartment (205).



WO 03/106292 A1



Published:

— with international search report

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

A DRINK CONTAINER FOR COMBINING A POWDER WITH A LIQUID

FIELD OF THE INVENTION

This invention is directed to a container which is typically a drink container and which can hold a powder and a liquid together in the container but initially housed separately and where the powder and liquid can be mixed together just prior to use. One form of the invention comprises a drink container where the liquid (typically water, milk etc) can be held in one compartment and the powder or solid (typically a flavour or mixer of some kind) can be held in a separate compartment and the two can be mixed together just prior to use. Typically, the container is purchased with the powder and the liquid already in the container. Then, liquid such as water or milk and powder can be mixed to provide the beverage. It should however be appreciated that the invention is not limited to a drink container, and the invention is not limited to a powder and may include a solid (such as a tablet) which can dissolve in liquid, a gel, a paste and the like.

BACKGROUND ART

Many beverages require mixing of components together to form the beverage. A particular example is a flavoured milk beverage which requires mixing of milk with a flavour. Some flavours are in the form of granulated powders which are mixed with the milk to form the beverage. Many of these powders comprise a mixture of nutrients, vitamins, minerals, to provide a fortified beverage.

Typically, the liquid is poured into a glass, cup or other container and the flavour is mixed into the liquid to form the beverage. It is known to provide containers which can be sealed such that the beverage does not spill from the container and the container containing the liquid/flavour mixture can be vigorously shaken to mix the components together.

It is also possible to place the flavour in the otherwise empty container, and to add the liquid just prior to use to form the beverage. However, this requires the liquid to be kept separately and away from the container until it can be mixed into the container.

There is an advantage in providing a container which can keep the contents sterile or fresh until just prior to mixing. For instance, such a

container can be used to mix a nutrient solution into a sterile water solution just before use. This type of container may have advantageous uses in the medical field and for feeding small babies, patients and the like where it is important to ensure that the contents of the container are maintained in a sterile manner but where it is not advantageous to have the components mixed together for a long period of time prior to use.

Sometimes, a mixed beverage will deteriorate over time and there is an advantage in being able to keep the various components separate and to mix the components together immediately prior to consumption.

Containers that allow mixing of two substances are known. Generally one of the substances is present in greater amounts (the diluent) than the other (the mixer substance). In the majority of these prior art containers, at least two compartments are provided, each compartment holding a substance. The prior art containers can generally be split into two main groups, namely, containers in which there are openings in each of the compartments and there is some movement of the compartments to align the openings in the compartments and containers in which openings in one container are covered and there is movement of a portion to uncover the openings.

In the majority of either type of containers, the powder or mixer substance to be mixed with a liquid falls into the main compartment holding the liquid when the movement takes place. This results in the powder generally falling as quickly as it can into the liquid. This can have several undesirable effects particularly that the mixing cannot be controlled and the powder may aggregate together due to its previous confinement and fall as a single mass. This single mass does not promote nor generally allow proper mixing of the two substances and large portions of a powder may remain undissolved when the user believes mixing should be complete leaving the user unsatisfied as the mixture is not as it should have been.

It may therefore be advantageous to provide a container for mixing two substances whereby the mixing may occur in the compartment which holds or stores the mixer substance as opposed to the main compartment holding the diluent as this configuration may provide superior

mixing and control of mixing.

In at least one known device wherein a combinable bottle assembly is provided, the liquid and the mixer substance may mix in the compartment holding the second substance. The container is maintained in the upright condition and portions of one or the other compartments are moved to allow the diluent to enter the compartment holding the mixer substance. According to this device the mixing begins as soon as the movement occurs. There is immediate mixing once the process is begun by movement of the compartments. As stated above, this type of mixing may lead to inconsistent or uncontrolled mixing.

There may therefore be an advantage in providing a container for mixing two substances whereby the mixing may occur in the compartment which holds or stores the mixer substance as opposed to the main compartment holding the diluent and a container wherein mixing does not immediately result from the movement of a portion of the container to the aligned or open condition as this configuration may provide superior mixing and control of mixing of the two substances. It may also allow alignment of the openings or opening of the compartment without immediately starting the mixing process.

It will be clearly understood that, prior art publications that are referred to herein, do not constitute an admission that any of these publications form part of the common general knowledge in the art in Australia or in any other country.

OBJECT OF THE INVENTION

The present invention is directed to a container where it is possible to have the mixer substance and the liquid both in the container at the same time but kept separate until it is desired to mix the components together. Thus, it is not necessary to have the mixer substance kept in a separate container, and the liquid kept in a separate container. The components can be kept in a substantially sterile manner.

In one form, the invention is directed to a container, the container containing a first compartment which can hold a liquid, and a second compartment which can hold a substance such as a powder, the

compartments being arranged to keep the liquid and the powder separate, and means to allow the liquid and powder to be combined in the first chamber.

In a particularly preferred form, the invention may reside in a
5 container for mixing two substances, the container having a first compartment which can hold a first substance, the first compartment having an opening and a mixer portion releasably attached relative to the first compartment, the mixer portion comprising a second compartment which can hold a second substance, the second compartment having at least one opening therein
10 wherein the compartments are movable between a first condition wherein the first substance and the second substance are separated and at least one second condition wherein the at least one opening in the second compartment is aligned with the at least one opening in the first compartment to allow the substances to be combined in the second compartment.

15 The first substance may suitably be a liquid. The second substance may be a mixer substance and may be a flavour, a pharmaceutical substance, a health supplement or any other substance that a user may desire to mix with a liquid.

It is particularly preferred that the container is circular or round
20 as this may be more pleasing to prospective purchasers and also more easily manufactured.

The second compartment may be substantially cup-like having a base wall, at least one sidewall and an open top. The second compartment may be circular and therefore have a circular sidewall. The circular sidewall
25 may have an upper portion and a lower portion. The upper and lower portions may be separated by a step such that the upper portion is preferably wider than the lower portion and may at least partially overlap the lower portion to define a cavity. The lower portion may be provided with at least one opening therein, and suitably there may be more than one opening spaced
30 around the lower portion of the sidewall. The openings may be spaced from the base wall of the second compartment and approximately halfway up the sidewall. This may prevent the second substance from falling from the openings in the sidewall even when the container is in the second condition.

The openings may preferably be oval shaped or lozenge shaped slots with the major axis of the oval or lozenge shape oriented substantially horizontally when the container is upright.

5 The upper portion of the sidewall may be adapted for the removable attachment of a lid to cover the open top of the second compartment. The upper portion may be provided with an outer threaded portion to engage with a similarly threaded portion provided on the lid. The lid may preferably be used to prevent substances from leaving the container until desired by the user.

10 The mixer portion may suitably comprise a collar portion positioned relative to the opening of the first compartment. The collar portion may be shaped according to the shape of the opening of the first compartment. Suitably, the collar portion may be adapted to be a mounting portion to assist in the location and retention of the second compartment
15 relative to the opening of the first compartment. The collar portion may be provided with a threaded portion to removably attach the collar portion adjacent to the opening in the first compartment. The collar portion may be provided with a lower wall portion, a step portion and an upper wall portion. The lower wall portion may preferably be of greater diameter than the upper
20 wall portion. The lower wall portion may be provided with the threaded portion to attach the collar portion relative to the opening of the first compartment. The upper wall portion may engage with the sidewall of the second compartment. The upper wall portion of the collar portion may suitably block or obstruct the at least one opening in the sidewall of the
25 second compartment when the container is in the first condition. Movement of the container into the second condition may suitably bring the at least one opening in the sidewall of the second container into alignment with the opening in the first compartment. The movement is preferably a longitudinal movement and the second compartment is suitably moved downwards into
30 the first compartment. The upper wall portion may be provided with light locking means. The mixer portion may be removable from the first compartment and in doing so may remove both the collar portion and the second compartment as well.

The container of the invention may preferably be provided with retention means for maintaining the first and second compartments in the first and second condition until movement from one condition to the other condition is desired by the user. Suitably, this retention means may comprise
5 a removable spacing means. The spacing means may be an annular member positioned between the first compartment and a portion of the second compartment and may initially act as a tamper-proof seal maintaining the compartments in the first condition. With the spacing means in place, the compartments may not be moveable to the second condition. The spacing
10 means may be provided with a means to allow easy removal of the spacing means, which may be a tab of perforated section for example. The spacing means may then be removable and the compartments movable in relation to one another.

The retention means may also be a light locking means to
15 prevent the compartments from inadvertently moving relative to each other. The light locking means can take several forms but in a particularly preferred embodiment comprises a number of buttons or raised portions on one either the second compartment or the collar portion which pass into a number of dimples or recesses located on the other of the second compartment or the
20 collar portion. Each may be provided with buttons and dimples or one may be provided with all the buttons and the other may be provided with all the dimples. This arrangement will prevent inadvertent movement of the two compartments but with minimal effort, the buttons can be moved out of the dimples to allow the openings to be aligned. Suitably, both the spacing
25 means and the light locking means are provided. The light locking means may maintain the first and second compartments in either condition and may require a force to be applied to either or both of the compartments to move them between the conditions. Suitably the light locking means is biased to maintaining the compartments in either the first or second condition.

30 Most preferably, the lower portion of the sidewall of the second compartment may be provided with the dimples or raised portions and the upper wall portion of the collar may be provided with the recesses or dimples. The raised portions may extend substantially around the sidewall of the

second compartment and there may be at least two raised portions, one positioned above the at least one opening in the sidewall and one below. Suitably there are two or more located above the at least one opening in the sidewall.

5 Preferably the first substance cannot enter the second compartment until the first compartment and the attached mixing portion are at least partially inverted. This may mean that the mixing of the substances occurs in the second compartment and not in the first compartment.

10 In use, the container may be sold to a customer with a first substance (preferably a liquid) in the first compartment, a second substance (preferably a powder) in the second compartment and the safety seal or spacing means in place. The spacing means may then be removed and the second compartment pushed into the first compartment until the openings in the sidewall of the second container are aligned with the opening in the first
15 compartment. It is important to appreciate that no mixing may occur at this stage.

 The container may then be at least partially inverted by shaking or simply be inverting. The liquid in the first compartment may then enter the second compartment and mix with the powder. The mixture formed may then
20 be poured from the container through the available openings or the second compartment may be removed from the container to allow greater access.

 The mixer substance, generally powder may be placed in the second compartment prior to sale of the container. The amount of powder may be less than that required to rise to the level of the openings in the
25 second compartment. However, it is anticipated that if enough powder was provided to rise to a level above the openings in the second compartment, the powder may be packed or slightly compressed into the second compartment.

 In this way a cohesive arch may be formed from the powdered material around the openings and the powder may be prevented from exiting the
30 second compartment by said cohesive arch. The cohesive arch may then be disrupted or displaced by the inversion of the container or shaking it.

 In this manner, the container (typically a drink container) can have a powder preloaded in the second compartment. The first compartment

may contain a measured amount of liquid, or may be empty.

If the container comprises a drink container, the volume of the container is typically between 200-2000 ml. This can of course vary to suit. Typically, the drink container will have a closed bottom wall, a substantially
5 cylindrical sidewall (although this can vary) and an open top through which the beverage can be consumed. Alternatively, the container can be seen as a mixing container which means that once the components are mixed to form the beverage, the beverage can be poured from the container and into a glass or drank directly from the container.

10 The container may be made of plastics, glass, metal and the like. The filled container can be pasteurised or sterilised.

Suitably, a closure or lid is provided to prevent liquid from being poured from the container. The closure may comprise a removable closure such as a lid. The lid may be a screw top lid, a flip top lid, a lid which can be
15 pulled out of the opening and the like.

The first compartment typically comprises the main body of the container and can contain the liquid.

The second compartment typically comprises an insert which can be inserted into the remainder of the container. The second
20 compartment typically contains the flavour material which may be in a solid form, a powder form, a granular form, a gel form, a paste form and the like. It is expected that the second compartment will be smaller than the first compartment as it is normal for the flavour material to comprise the minor portion of the beverage.

25 The insert may comprise a separate compartment which is formed separately and placed inside the container. Alternatively, the insert may comprise part of the closure, part of the first container and the like.

The container comprises means to allow the contents of the first compartment and the second compartment to be mixed. In one form, the
30 means may comprise at least one opening in the second compartment which can be selectively blocked or closed by a closure member. The closure member may comprise an outer third compartment which sits around the second compartment and which contains at least one opening or it may

comprise the collar portion as described earlier. Rotation of the third compartment to align the opening in the second compartment with the third compartment allows the contents of the second compartment to mix with the first compartment. Conversely, rotation of the third compartment to place the openings out of alignment will mean that the contents of the second compartment cannot be mixed with the first compartment.

Suitably, the second compartment is provided with a plurality of openings in order to allow quick and ready mixing, and the third compartment is provided with a plurality of openings which can align with the openings in the second compartment or which can block the openings in the second compartment. Typically, the second compartment and the third compartment can be rotated or twisted relative to each other to block or to open the openings.

In another form, the means to allow the contents of the second compartment to mix with the first compartment may comprise a breakable membrane, a peel away membrane and the like. The membrane may comprise paper, plastic and like.

Other means to allow the contents of the second compartment to mix of the contents of the first compartment are envisaged.

BRIEF DESCRIPTION OF THE DRAWINGS

Embodiments of the invention will be described with reference to the following drawings in which:

Figure 1. Illustrates an exploded view of a container according to a first embodiment of the invention.

Figure 2. Illustrates a section view of the assembled container of Figure 1 in the first condition.

Figure 3. Illustrates a section view of the assembled container of Figure 1 in the second condition.

Figure 4. Illustrates an exploded view of a container according to a second embodiment of the invention.

Figure 5. Illustrates a section view of the assembled container of Figure 4 in the first condition.

Figure 6. Illustrates an exploded view of a container according to a third

embodiment of the invention.

Figure 7. Illustrates section view of the assembled container of Figure 6.

Figure 8. Illustrates a container according to a fourth embodiment.

Figure 9. Illustrates a container according to a fifth embodiment.

5

BEST MODE

Referring to the drawings and initially to Figure 1, there is illustrated an exploded view of a container 201 according to a first embodiment.

10 The container 201 has a first compartment 202 which can hold a first substance. The first compartment 202 has an opening 203 and a mixer portion 204 releasably attached relative to the first compartment 202. The mixer portion 204 comprises a second compartment 205 which can hold a second substance, and the second compartment 205 has at least one opening 206 therein. The compartments 202, 205 are movable between a
15 first condition wherein the first substance and the second substance are separated and a second condition wherein the at least one opening 206 in the second compartment 205 is aligned with the at least one opening 203 in the first compartment 202 to allow the substances to be combined in the second compartment 205.

20 As seen in Figure 1 to 3, the container 201 is circular or round as this may be more pleasing to prospective purchasers and also more easily manufactured.

The second compartment 205 is substantially cup-like having a base wall 207, a circular sidewall 208 and an open top 209. The circular
25 sidewall 208 has an upper portion 210 and a lower portion 211. The upper 210 and lower portions 211 are separated by a step 212 such that the upper portion 210 is wider than the lower portion 211. The lower portion 211 is provided with a plurality of openings 206 therein, and the openings 206 are spaced around the lower portion 211 of the sidewall. The openings 206 are
30 spaced from the base wall 207 of the second compartment 205 and are approximately halfway up the sidewall and at the top of the lower portion 211.

This may prevent the second substance from falling from the openings 206 in the sidewall 208 even when the container 201 is in the second condition. The

openings 206 are oval shaped or lozenge shaped slots with the major axis of the oval or lozenge shape oriented substantially horizontally when the container 201 is upright.

5 The upper portion 210 of the sidewall is adapted for the removable attachment of a lid 213 to cover the open top 209 of the second compartment 205. The upper portion 210 is provided with a threaded portion 214 to engage with a similarly threaded portion provided on the lid 213. The lid 213 is used to prevent substances from leaving the container 201 until desired by the user.

10 The mixer portion 204 further comprises a collar portion 215 positioned relative to the opening 203 of the first compartment 202. The collar portion 215 is adapted to be a mounting portion to assist in the location and retention of the second compartment 205 relative to the opening 203 of the first compartment 202. The collar portion 215 is provided with a threaded
15 portion 216 to removably attach the collar portion 215 adjacent to the opening 203 in the first compartment 202. The collar portion 215 has a lower wall portion 217, a step portion 218 and an upper wall portion 219. The lower wall portion 217 is of greater diameter than the upper wall portion 219. The lower wall portion 217 is provided with the threaded portion 16 to attach the collar
20 portion 215 relative to the opening 203 of the first compartment 202. The upper wall portion 219 engages with the sidewall 208 of the second compartment 205. The upper wall portion 219 of the collar portion 215 blocks or obstructs the openings 206 in the sidewall of the second compartment 205 when the container 201 is in the first condition. Movement of the container
25 201 into the second condition brings the openings 206 in the sidewall of the second container 205 into alignment with the opening 203 in the first compartment 202. The movement is a longitudinal movement and the second compartment 205 is moved downwards into the first compartment 202.

30 The upper wall portion 219 is provided with light locking means. The mixer portion 204 is not generally removable from the first compartment 202. Both the collar portion 215 and the second compartment 205 are generally removable.

The container 201 of the invention is provided with retention means for maintaining the first 202 and second compartments 205 in the first and second condition until movement from one condition to the other condition is desired by the user. This retention means comprises a
5 removable spacing means 220. The spacing means 220 is an annular member positioned between the lid 213 and a portion of the collar portion 215 and initially acts as a tamper-proof seal maintaining the compartments in the first condition. With the spacing means 220 in place, the compartments are not moveable to the second condition. The spacing means 220 is provided
10 with a means to allow easy removal of the spacing means, which may be a tab 221 or perforated section, for example. The spacing means 220 may then be removable and the compartments movable in relation to one another.

The retention means also comprises a light locking means to prevent the compartments from inadvertently moving relative to each other.
15 The light locking means can take several forms but in the particularly preferred embodiment illustrated in Figure 2 and 3, it comprises a number of buttons or raised portions 222 on the second compartment 205 which pass into a number of dimples or recesses 223 located on the collar portion 215. This arrangement prevents inadvertent movement of the two compartments
20 but with minimal effort, the raised portions 222 can be moved out of the recesses 223 to allow the openings 203, 206 to be aligned.

The raised portions 222 extend substantially around the sidewall of the second compartment 205 and there are at least two raised portions 222, one positioned above the openings 206 in the sidewall and one below.

25 As stated, the first substance cannot enter the second compartment 205 until the first compartment 202 and the attached mixing portion 204 are at least partially inverted. This means that the mixing of the substances occurs in the second compartment 205 and not in the first compartment 202.

30 In use, the container 201 is sold to a customer with a first substance (preferably a liquid) in the first compartment 202, a second substance (preferably a powder) in the second compartment 205 and the safety seal or spacing means 220 in place. The spacing means 220 is then

removed and the second compartment 205 pushed into the first compartment 202 until the openings 206 in the sidewall of the second container 205 are aligned with the opening 203 in the first compartment 202. It is important to appreciate that no mixing may occur at this stage.

5 The container 201 may then be at least partially inverted by shaking or simply be inverted. The liquid in the first compartment 202 may then enter the second compartment 205 and mix with the powder. The mixture formed may then be poured from the container 201 through the available openings 203, 206 or the second compartment 205 may be
10 removed from the container 201 to allow greater access.

Referring next to Figure 3, an exploded view of a container according to a second embodiment is illustrated.

The container comprises 4 separate parts being an outer body 100, an outer cup 101, an inner cup 102, and a lid 103. In the embodiment,
15 the outer body 100 comprises the first compartment, the inner cup 102 comprises the second compartment, the outer cup 101 comprises the third compartment, and the lid 103 comprises the closure.

In the embodiment, the container is used as a drink container to mix a powder with a liquid. Therefore, in this particular embodiment, the outer
20 body (first compartment) is substantially cylindrical having a closed bottom wall 104, a cylindrical sidewall 105, and an open top 106. The volume of the first compartment is typically between 200-2000 ml. Adjacent top 106 is provided an annular shoulder 107 which allows the container to be placed in a drink holder.

25 The second compartment (inner cup 102) comprises an insert which can be placed through top 106 and into the container. The second compartment comprises a stubby cylindrical body having a closed bottom wall 108 a cylindrical sidewall 109 and an open top 110. Cylindrical sidewall 109 is provided with an array of openings 110 through which the contents of the
30 compartment can pass. A desired amount of powder 111 can be placed in compartment 102. Typically, the openings 110 are in an upper portion of the second compartment such that when the powder 111 is placed into compartment 102, the powder does not contact the openings when the

container is in the upright position.

The third compartment (outer cup 101) comprises a substantially cylindrical body having a closed bottom wall 112, a cylindrical sidewall 113, and an array of openings 114 which are positioned to overlie openings 110 in the second compartment 102 when the second compartment 102 is placed inside the third compartment 101. The third compartment 101 is slightly larger than the second compartment which means that the third compartment can rotate relative to the second compartment. The third compartment has an open top 115 and a peripheral flange 116 which overlies flange 117 on the first compartment 100 such that the third compartment 101 is supported adjacent the mouth of the first compartment and does not merely fall to the bottom of the first compartment.

Lid 103 has a depending sidewall 117 which contains an internal thread (not illustrated) which threading engages with an outer thread 120 on the upper portion of second compartment 102.

In use, powder 111 can be preloaded into the second compartment 102. A liquid such as water or milk can be placed in first compartment 100. The container can then be closed with lid 103 and can be transported, stored and the like. Even if the container is shaken or inverted, liquid will not leak from the container and liquid will not contact powder 111 because the third compartment 101 has been rotated such that its openings do not align with the openings of second compartment 102.

When it is desired to mix the components, the third compartment 101 can be rotated relative to the second compartment 102 such that the openings 114 and 110 are aligned. The container can then be inverted, shaken and the like to allow the powder to spill through the openings and into first compartment 100 and can be mixed with the liquid in the compartment. Lid 103 can be removed and the beverage can be drunk either straight from the container, or can be poured into a glass, cup and the like for consumption.

Third compartment 101 and second compartment 102 are provided with a light locking means to prevent the compartments from inadvertently rotating relative to each other. The light locking means can take

several forms but in this particular embodiment comprises a number of buttons on one of the compartments which pass into a number of dimples on the other compartment. Each compartment may be provided with buttons and dimples or one compartment may be provided with all the buttons and the other compartment may be provided with all the dimples. This arrangement will prevent inadvertent rotation of the two compartments but with minimal effort, the buttons can be rotated out of the dimples to allow the openings to be aligned.

The third compartment can be twisted or rotated by grasping the outer wall of flange 116 and rotating the third compartment relative to the second compartment.

Figure 3-4 illustrates a second and simpler embodiment of the invention. In this embodiment, the first compartment comprises the outer body 130 of the container and the outer body is similar to the outer body 100 of the previous embodiment except that the opening 131 has a threaded sidewall 132. One main difference is that lid 133 is larger than lid 103 in the previous embodiment and lid 133 contains the powder 134. The powder is sealed in lid 133 by a foil seal 134, the foil seal comprising a membrane which can be peeled away or ruptured to allow powder 134 to mix with the contents of first container 130. Thus, lid 133 can be preloaded with powder 134 and sealed using the foil seal 135. The lid can then be screwed tight against first compartment 130. When the beverage needs to be mixed, the lid can be unscrewed and the desired liquid can be placed in first compartment 130. Alternatively, the liquid can already be within compartment 130. The lid is then inverted, the foil seal is peeled off and the lid can be reattached to the compartment which means that the powder 134 will fall into the compartment. Of course, the powder 134 may comprise a plug of material which can dissolve when contacting the liquid in first compartment 130.

Figures 5 and 6 provide further embodiment of the invention. The container 10 of figure 5 has a first container portion 11 and a second container portion 12. Portion 11 has a closure 13 including a neck 14 at one end of body 15 of the container portion 11, a cap 16 and a teat 17. The neck 14 is externally screw threaded and the cap 16 has a corresponding internally

threaded portion to allow the cap 16 to be screw thread onto the neck 14. The cap 16 has an aperture 18 through which part of the teat 17 may project when the cap 16 with the teat 17 extending through it is screwed onto the neck 14, the teat is secured fixed relative to the body 15.

5 A cover 20 is fitted over the teat 17 and the cap 16 and may be snap fitted to an upper part of the body 15.

The body 15 forms a chamber 21 which may contain a desired substance such as a liquid for example. The body has a lower wall 22 provided with a coupling 23 which extends into the interior of the body and
10 normally seals the chamber. The coupling in this embodiment is internally screw threaded. Level indicating marks 24 (only one of which is shown) may be present at intervals along the body 15.

The coupling 23 has a wall 25 which normally seals the chamber 21.

15 The second container portion 12 has a body 30 with a chamber 31 for containing a desired substance which, when the container 10 is in use, is intended to be mixed with the substance within the chamber 21 of the container portion 11. The substances are normally maintained separate until required to be dispensed from the container 10.

20 Portion 12 has a neck 32 extending from the body 30. The neck 32 is externally threaded so that it may be connected to the coupling 23. The neck has an upper face 33 provided with openings 34 which function as a sleeve. Projections 35 extend outwardly from face 33 and terminate in a point 36 which may pierce wall 25 to allow the chamber 31 to communicate with
25 chamber 21 to allow the substances within the chambers to be mixed with one another. A seal 37 is shown present between the two container portions 11 and 12 and is received within coupling 23.

In Figure 5 the teat is shown in the position it would assume during use of the container 10 when its contents is being dispensed from the
30 container. When the container is not in use the teat may be reversed to project into the chamber 21 and held in that position by the cap 16.

Figure 6 shows a container 40 according to a second embodiment of the invention. The container has a first container portion 41

and a second portion 42. Portion 41 has a chamber 43 provided by body 44.

A neck 45 extends from an upper end of the body 44 and is externally threaded to receive a cap 46. A teat 47 is shown in the position it would assume when the container is not in use. In this position the teat extends into
5 the body 44 and its skirt 48 is captured between the cap 46 and the lip 49 at the end of the neck 45. A sealing disc (not shown) normally seals the opening 50 in the cap 46.

A coupling 60 extends into the chamber 43 from a base wall 61 of the body 44. The coupling has a series of apertures 62 for a purpose
10 described below. The coupling has a passage with an increased width portion 63 and a lateral arcuate slot 64.

The container portion 42 has a body 70 with a chamber 71. A neck 72 extends from the body 70. The neck 72 has a bead 73 which, when the portion 42 is mounted to container portion 41, is received as a snap fit
15 relative to the increased width portion 63. In this way the neck 72 may be securely received within the coupling. The end of the neck 72 has an end face 74 with apertures 75. A locating lug 76 projects outwardly from the neck 72 and has an arcuate length less than the arcuate length of slot 64. Lug 76 is received within the slot 64 when the portion 42 is connected to portion 41.
20 Portion 42 may be rotated relative to portion 41 to the extent allowed by the slot to allow the apertures 75 to be moved from a position out of registry with apertures 62 to a position in registry with the apertures 62. When in registry the contents of chamber 71 may enter chamber 43 and be mixed with contents of that chamber.

25 In one example application the chamber in the first container portion may be sterile water and the contents within the chamber may consist of a powdered infant's formulae. The mixing may also be dissolution of a substantially solid mass of mixer substance each time the container is inverted to release the first substance in a type of controlled release. The container
30 functions to keep the contents of the chambers separate and when desired the contents may be allowed to mix and the mixture may then be dispensed.

Claims:

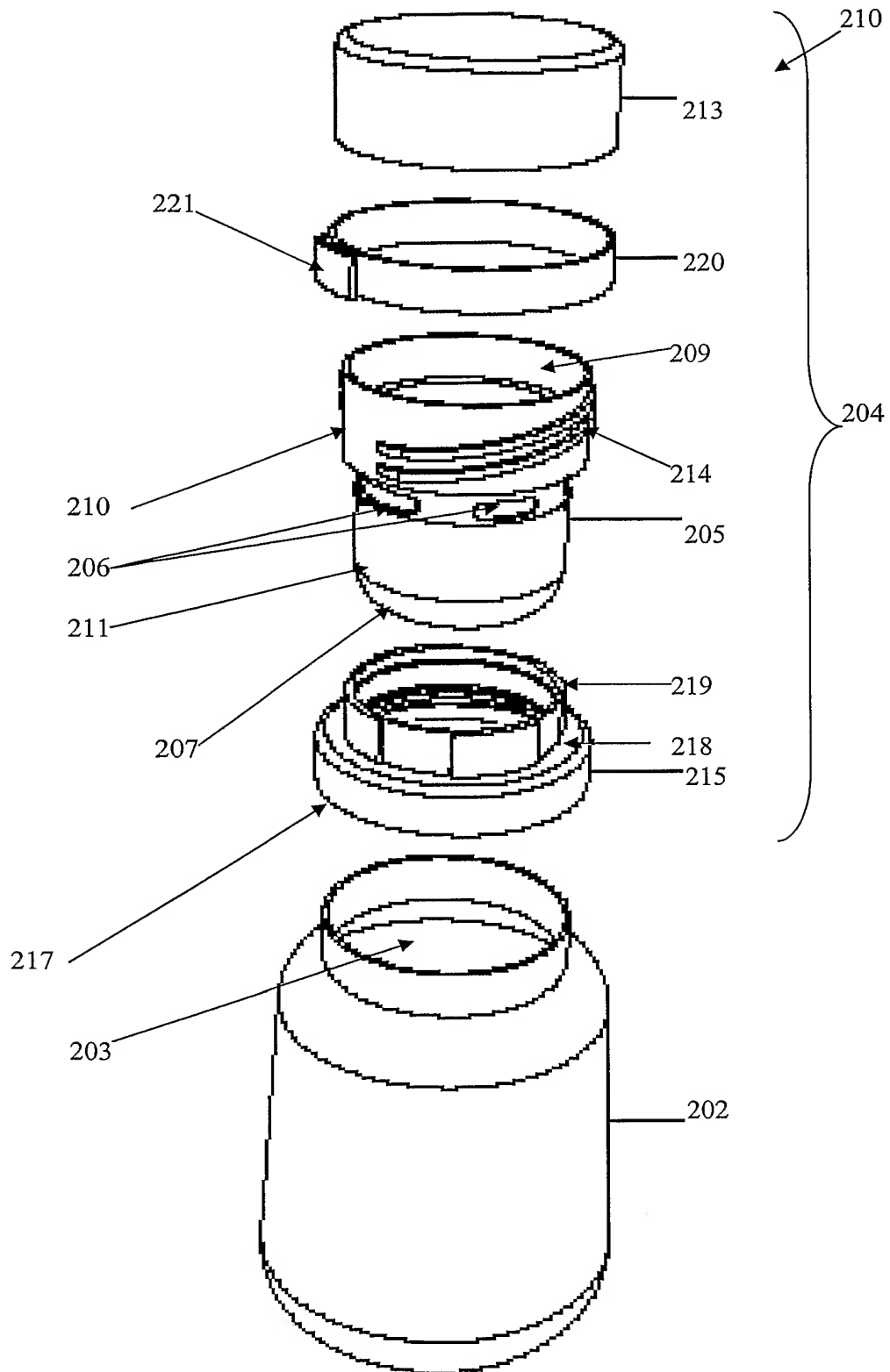
1. A container for mixing two substances, the container having a first compartment which can hold a first substance, the first compartment having an opening and a mixer portion releasably attached relative to the first
5 compartment, the mixer portion comprising a second compartment which can hold a second substance, the second compartment having at least one opening therein wherein the compartments are movable between a first condition wherein the first substance and the second substance are separated and at least one second condition wherein the at least one opening
10 in the second compartment is aligned with the at least one opening in the second compartment to allow the substances to be combined in the second compartment.
2. The container according to claim 1 wherein the first substance cannot enter the second compartment until the container is at least partially inverted
15 allowing the first substance to enter the second compartment.
3. The container according to claim 1 wherein the movement is a longitudinal movement and the second compartment is suitably moved downwards into the first compartment.
4. The container according to claim 1 wherein movement of the container
20 into the second condition brings the at least one opening of the second container into alignment with the opening in the first compartment.
5. The container according to claim 1 wherein the container further comprises retention means for maintaining the first and second compartments in the first and second condition until movement from one
25 condition to the other condition is desired by the user.
6. The container according to claim 5 wherein the retention means comprises a removable spacing means.
7. The container according to claim 1 wherein the second compartment has a base wall and the at least one opening in the second compartment is
30 spaced from the base wall.
8. The container according to claim 1 wherein the container further comprises a collar portion positioned relative to the opening of the first compartment, the collar portion adapted to be a mounting portion to assist in

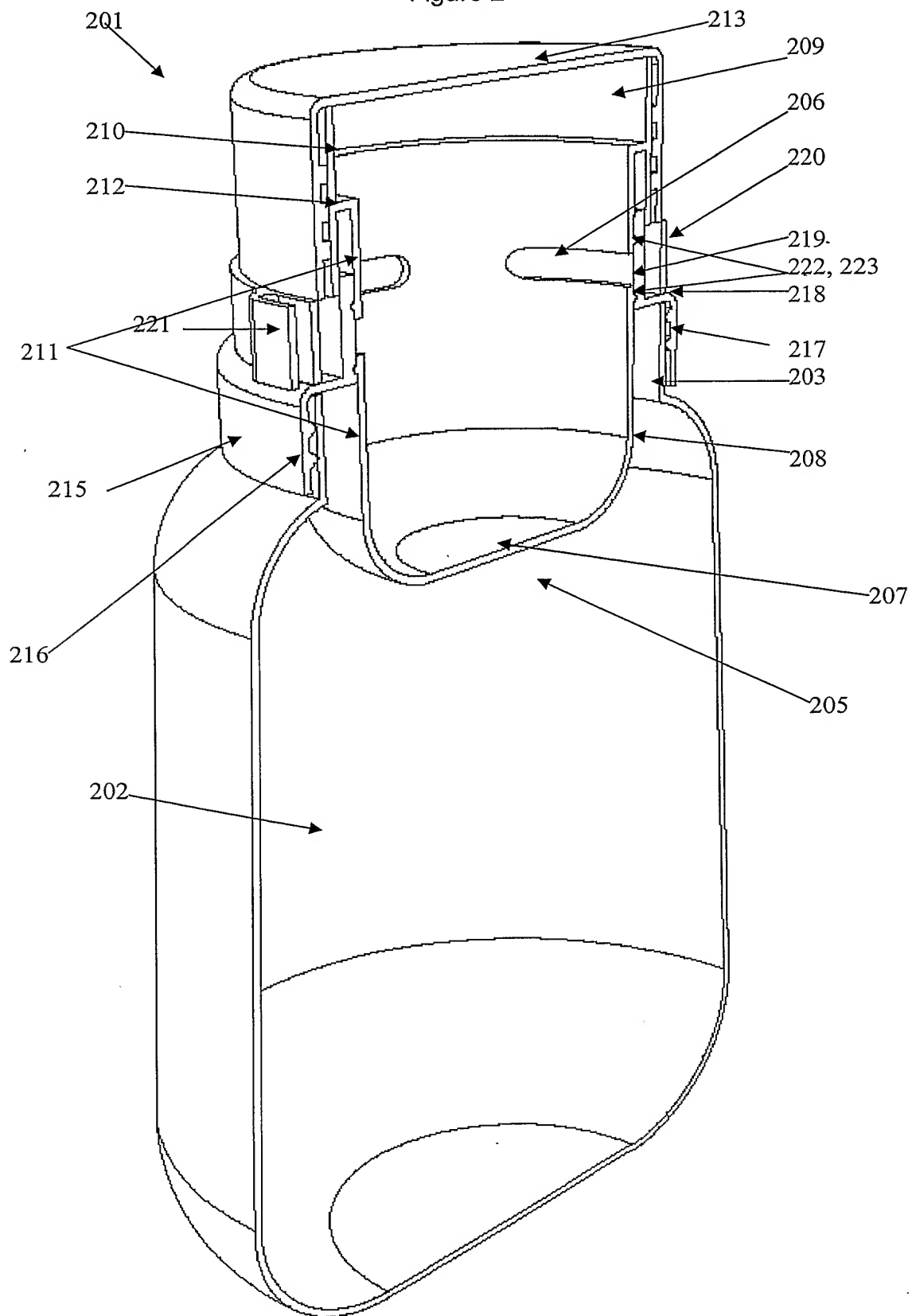
the location and retention of the second compartment relative to the opening of the first compartment.

9. The container according to claim 8 wherein the collar portion has a lower wall portion, a step portion and an upper wall portion, the upper wall portion engaging with the second compartment to block or obstruct the at least one opening in the second compartment when the container is in the first condition.

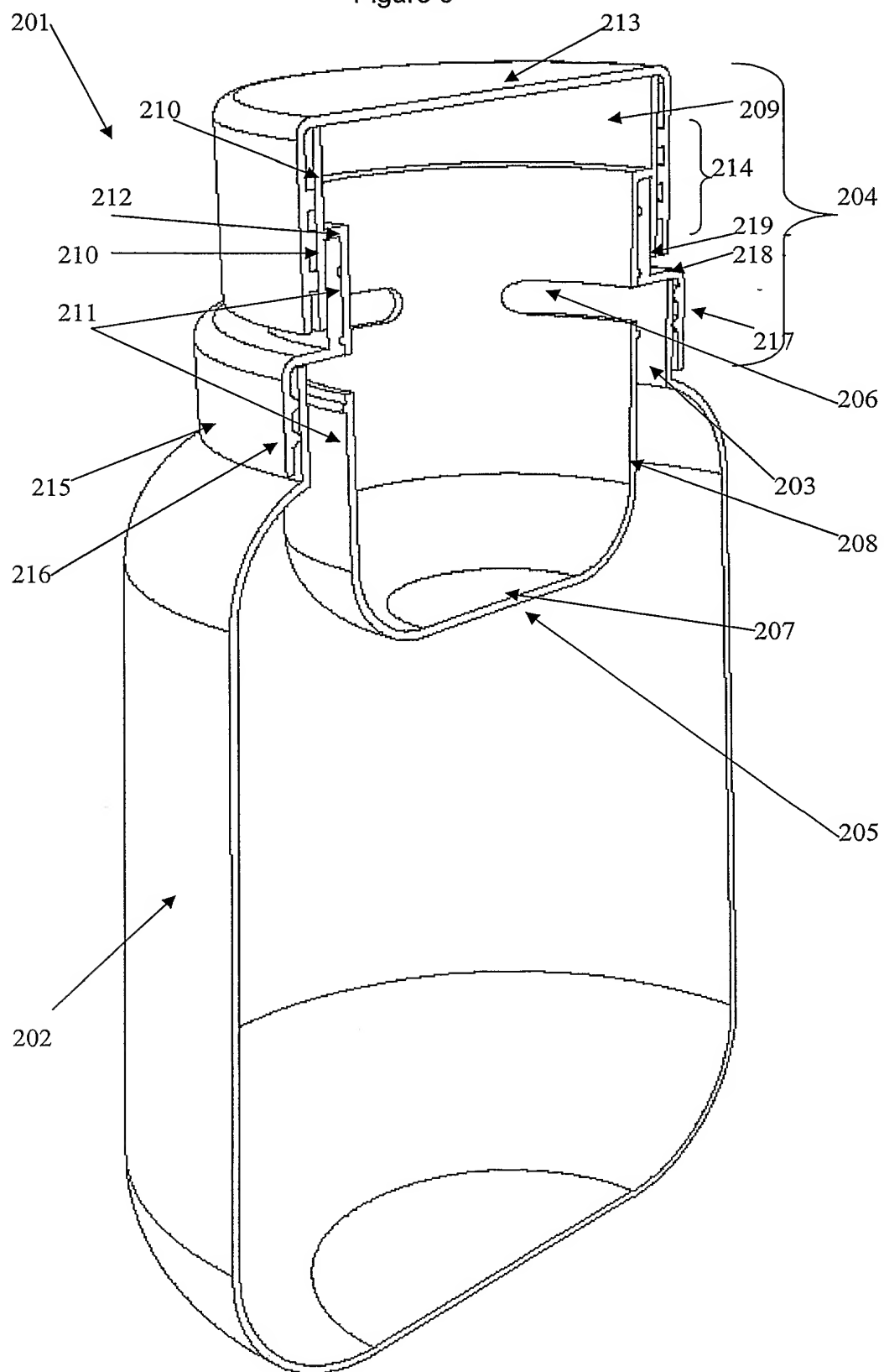
10. The container according to claim 5 wherein the retention means comprises a light locking means to prevent inadvertent movement of the two compartments comprising a number of buttons or raised portions on the second compartment which pass into a number of correspondingly shaped portions located relative to the opening of the first compartment.

1/9
Figure 1



2/9
Figure 2

3/9
Figure 3



4/9

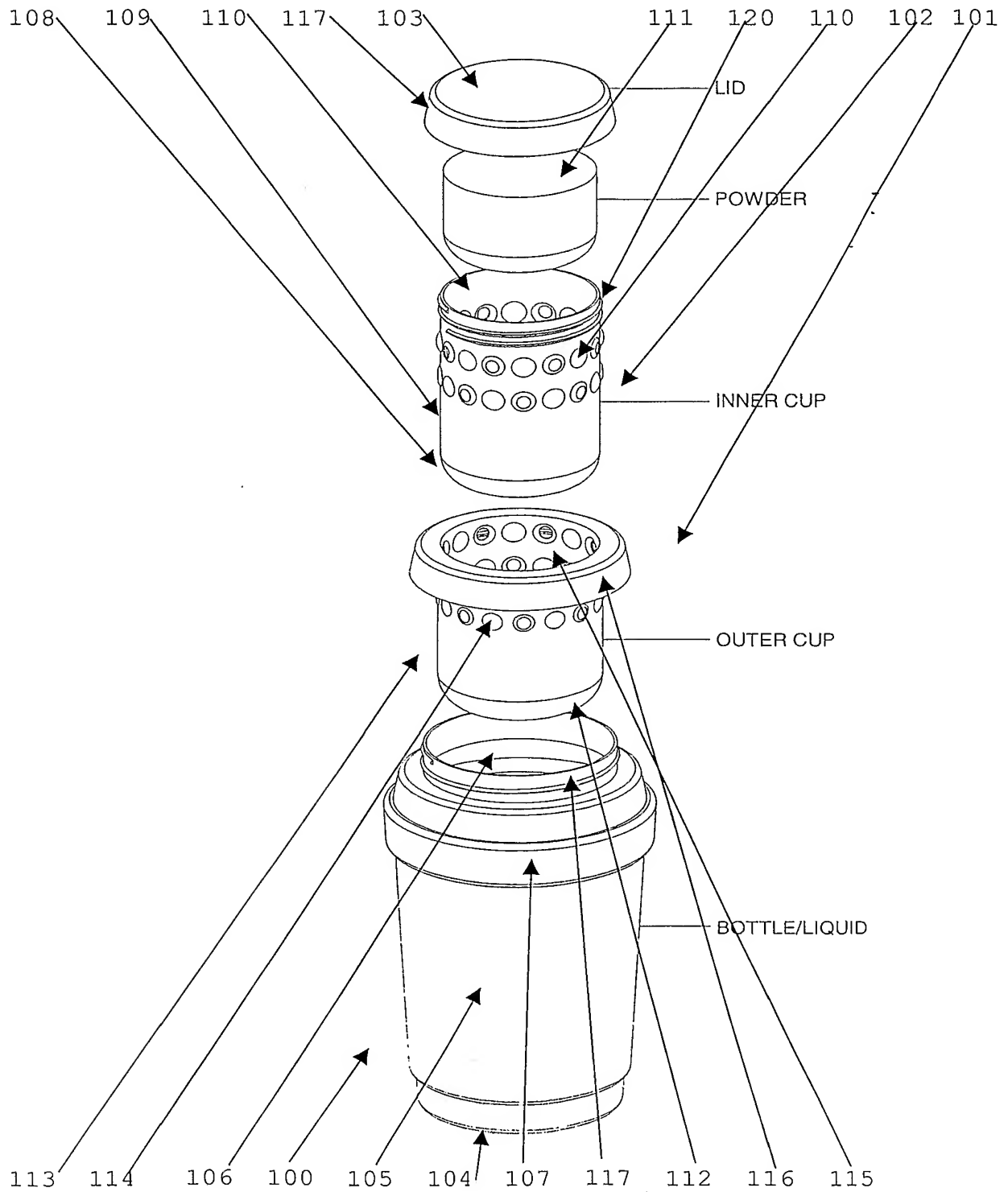


FIGURE 4

5/9

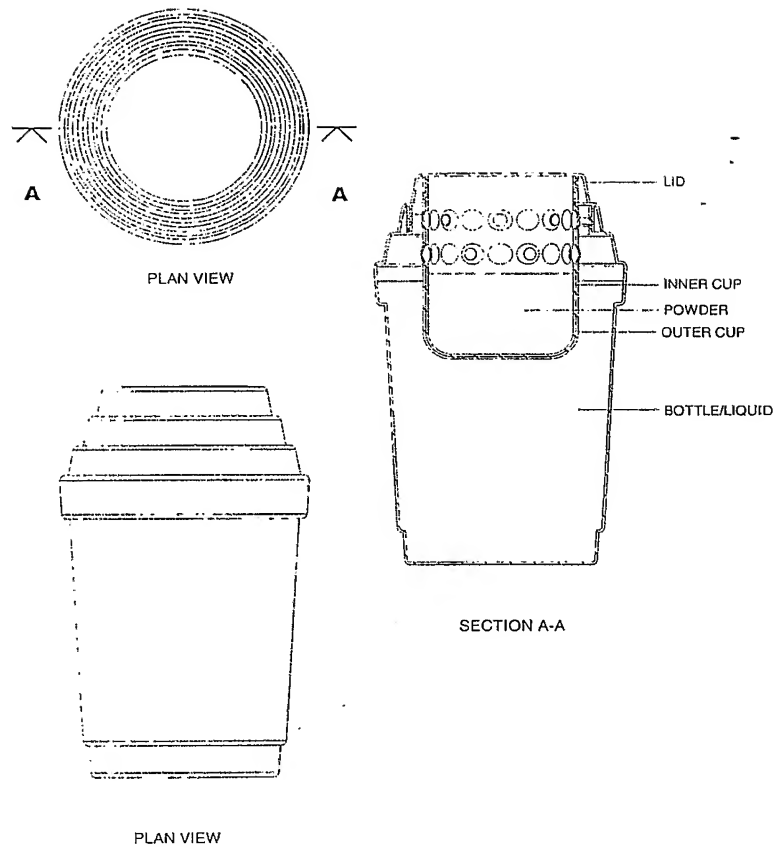


FIGURE 5

6/9

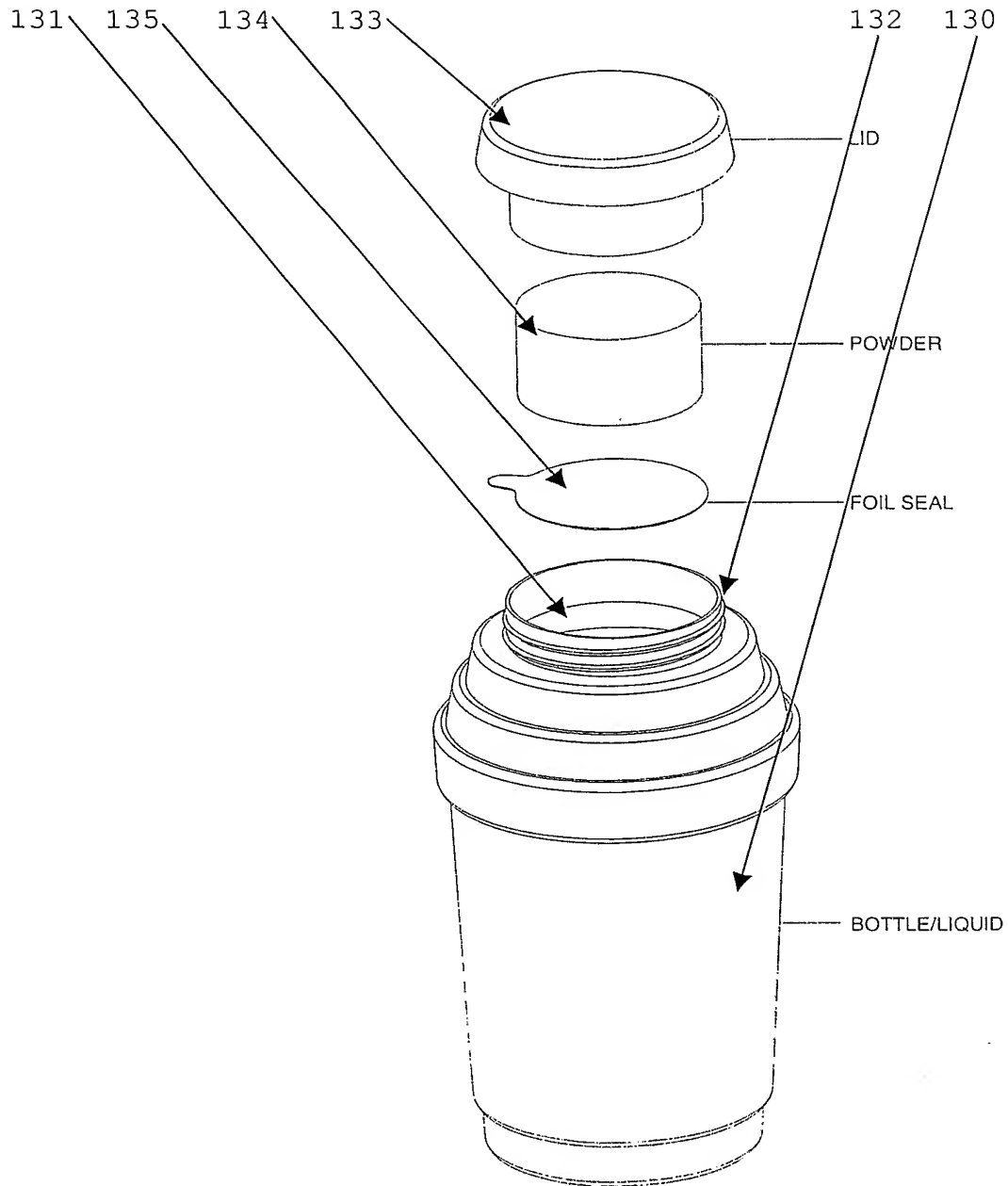


FIGURE 6

7/9

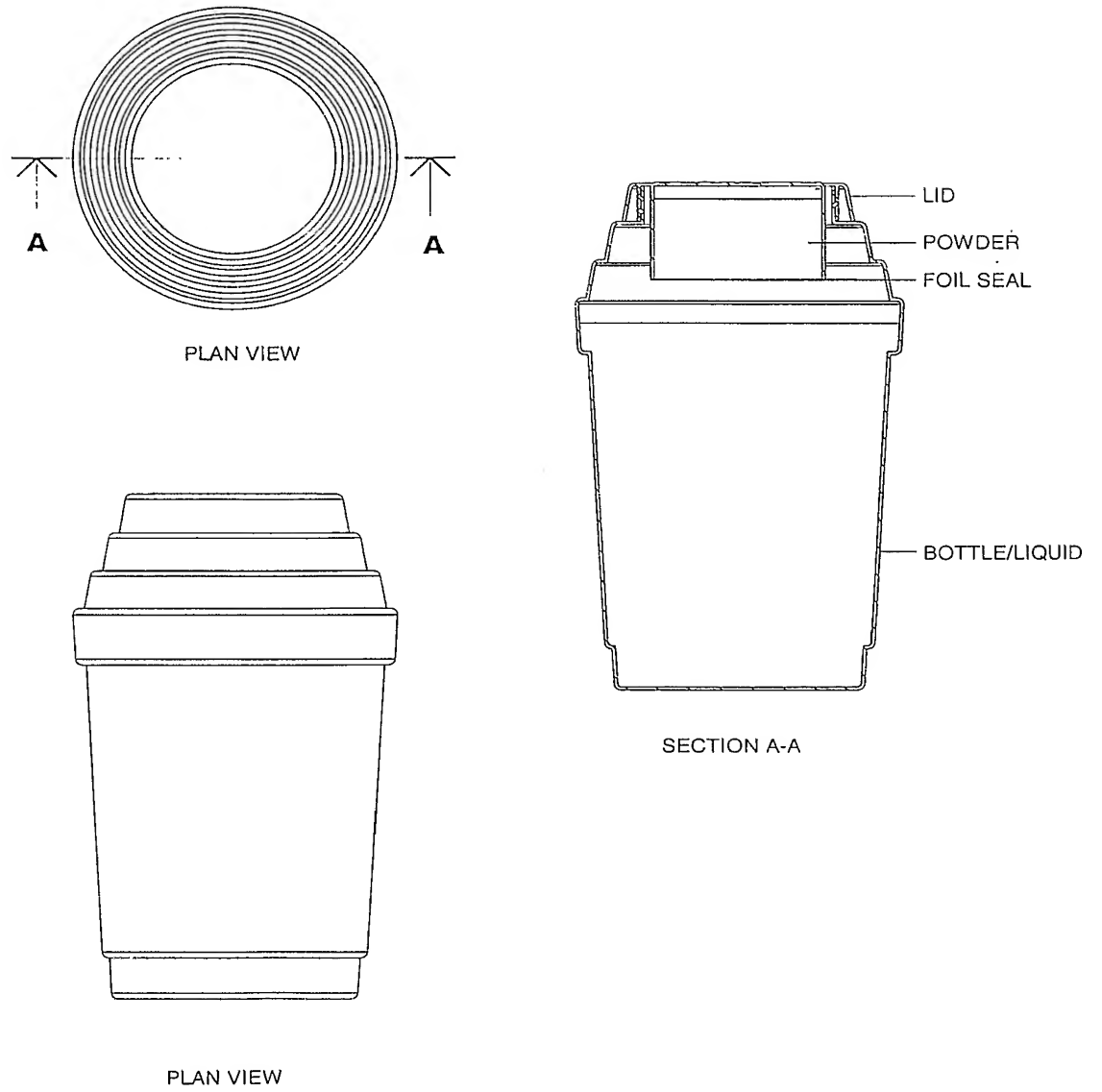
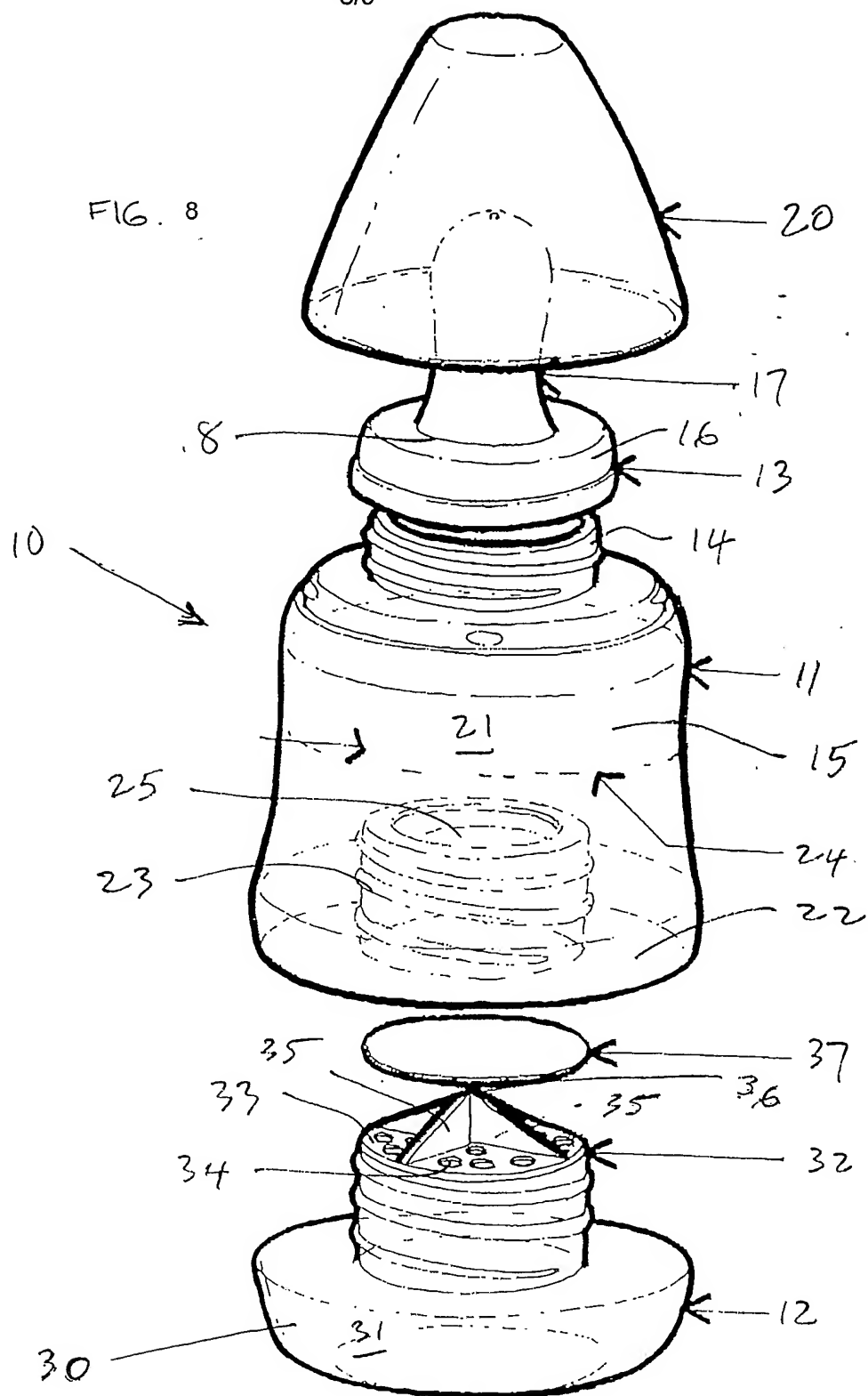
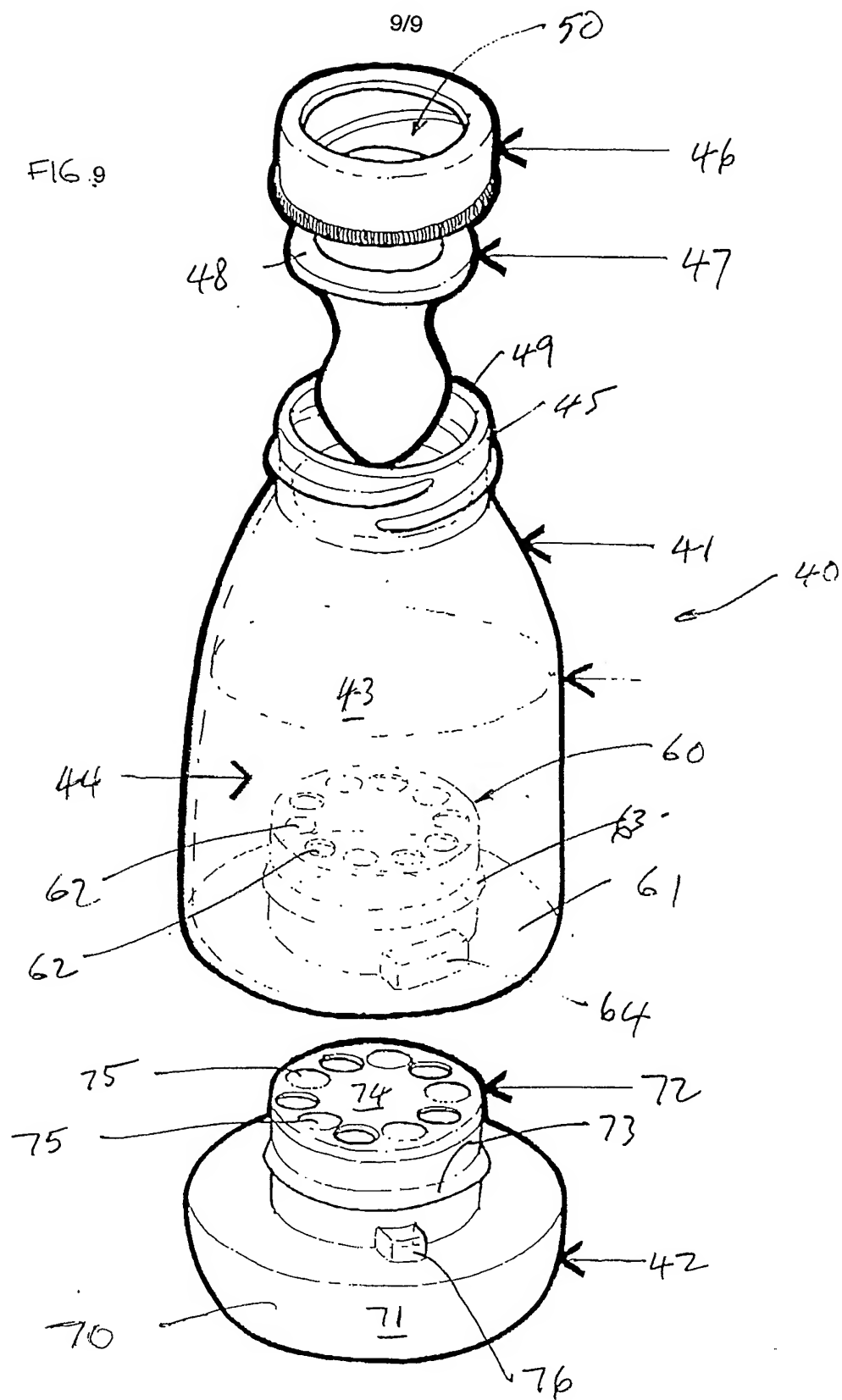


FIGURE 7

8/9





INTERNATIONAL SEARCH REPORT

International application No.

PCT/AU03/00733

A. CLASSIFICATION OF SUBJECT MATTER

Int. Cl. 7: B65D81/32, A61J 9/00

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

REFER ELECTRONIC DATA BASE BELOW

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

DWPI IPC: A61J, B65D and Keywords: particulate, capsule, vitamin, additive, powder, tablet, flavour, liquid, paste, combine, dose, dissolve, preload, divide, rotate, align, select, position and similar terms

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 6045254 A (INBAR ET AL) 4 April 2000 See whole document	1
X	US 3924741 A (KACHUR ET AL) 9 December 1975 See whole document	1, 3-5
X	US 5984141 A (GIBLER) 16 November 1999 See whole document	1, 3-5



Further documents are listed in the continuation of Box C



See patent family annex

* Special categories of cited documents:	
"A" document defining the general state of the art which is not considered to be of particular relevance	"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
"E" earlier application or patent but published on or after the international filing date	"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)	"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
"O" document referring to an oral disclosure, use, exhibition or other means	"&" document member of the same patent family
"P" document published prior to the international filing date but later than the priority date claimed	

Date of the actual completion of the international search 29 August 2003	Date of mailing of the international search report 05 SEP 2003
Name and mailing address of the ISA/AU AUSTRALIAN PATENT OFFICE PO BOX 200, WODEN ACT 2606, AUSTRALIA E-mail address: pct@ipaaustralia.gov.au Facsimile No. (02) 6285 3929	Authorized officer A. ALI Telephone No : (02) 6283 2607

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No.

PCT/AU03/00733

This Annex lists the known "A" publication level patent family members relating to the patent documents cited in the above-mentioned international search report. The Australian Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

Patent Document Cited in Search Report		Patent Family Member					
US	6045254	AU	58761/98	BR	9713791	CN	1247514
		CZ	9902322	EP	954484	IL	130206
		NZ	336540	PL	334338	WO	9829317
		US	6113257	US	6089389	AU	15753/99
		WO	9932065				
US	3924741	NIL					
US	5984141	EP	951102	JP	11329532	US	6319075
		US	2002031925	US	2002034889	US	2002098743
		CN	1409445	EP	1289070	JP	2003151669